

**BRIAN H. TOBY****Supervisory Chemist**

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**RESEARCH INTERESTS:**

- Molecular sieve structure-property relationships
- Crystallographic studies of solid state materials
- Nonperiodic behavior (local distortions) in crystalline materials
- Novel powder diffraction structural analysis techniques
- Powder diffraction instrumentation and data processing techniques
- Novel neutron single-crystal instrumentation
- Molecular modeling studies of inorganic and organometallic materials

**EDUCATION AND DEGREES:**

Ph.D., Physical Chemistry, California Institute of Technology, 1986

BA, Chemistry, Rutgers College, 1980

**PROFESSIONAL EXPERIENCE:**

NIST Center for Neutron Research, Leader, Crystallography Team 1998-present, Chemist 1995-present.

Air Products and Chemicals, Inc., Central Research Services Dept., Senior Principal Research Chemist 1993-1995, Principal Research Chemist, 1991-1993.

University of Pennsylvania, Department of Materials Science and the Laboratory for Research on the Structure of Matter, Lecturer 1990-1991, Research Associate, 1988-1990.

Union Carbide, Corp., Central Scientific Lab., Senior Chemist, 1985-1988.

**AWARDS:**

BA awarded with Honors and Highest Distinction in Chemistry, 1980

Phi Beta Kappa, 1980

Henry Rutgers Scholar, 1980

American Institute of Chemists Undergraduate Award, 1980

**PUBLICATIONS:**

Total publications: 54 (as of October 2000)

Recent and Noteworthy Publications:

**Journal of the American Chemical Society**, in press (2000) (with Park S.-H., Parise J. B., Gies H., Liu H., and Grey C.P.) *A New Porous Lithosilicate with a High Ionic Conductivity and Ion-exchange Capacity.*

**Chemical Communications**, in press (2000) (with Reisner B.A., Lee Y., Jones G., Hanson J.C., Freitag A., Parise J. B., Corbin D.R., Larese J.Z., and Kahlenberg V.) *Understanding negative thermal expansion and "trap door" cation relocations in zeolite RHO.*

**Microporous and Mesoporous Materials**, 39(1-2) 77-89 (2000) (with Khosrovani N., Dartt C. B., Davis M. E., and Parise J. B.) *Structure-directing Agents and Stacking Faults in the CON System: A Combined Crystallographic and Computer Simulation Study.*

**Journal of Physical Chemistry B**, 104(20) 4844-4848 (2000) (with Olson D. H., Khosrovani N., and Peters A. W.) *Crystal structure of dehydrated CsZSM-5 (5.8Å): Evidence for nonrandom aluminum distribution.*

**Chemistry of Materials**, 11(10) 2780-2787 (1999) (with Johnson G. M., Reisner B. A., Tripathi A., Corbin D. R., and Parise J. B.) *Flexibility and cation distribution upon lithium exchange of aluminosilicate and aluminogermanate materials with the RHO topology*.

**Journal of Physical Chemistry**, 99(43) 16087-16092 (1995) (with Vitale G., Bull L. M., Morris R. E., Cheetham A. K., Coe C. G., and MacDougall J. E.) *Combined Neutron and X-Ray-Powder Diffraction Study of Zeolite Ca LSX and A  $^2\text{H}$  NMR Study of Its Complex with Benzene*.

**Acta Crystallographica A**, 48 336-346 (1992) (with Egami T.) *Accuracy of Pair Distribution Function-Analysis Applied to Crystalline and Noncrystalline Materials*.

**Journal of the American Chemical Society**, 117(43) 10694-10701 (1995) (with Ramprasad D., Pez G. P., Markley T. J., and Pearlstein R. M.) *Solid-State Lithium Cyanocobaltates with A High-Capacity for Reversible Dioxygen Binding - Synthesis, Reactivity, and Structures*.

**Science**, 273(5271) 81-84 (1996) (with Subramanian M. A., Ramirez A. P., Marshall W. J., Sleight A. W., and Kwei G. H.) *Colossal magnetoresistance without  $\text{Mn}^{3+}/\text{Mn}^{4+}$  double exchange in the stoichiometric pyrochlore  $\text{Ti}_2\text{Mn}_2\text{O}_7$* .

**Thesis Advisor:**

W. Henry Weinberg, Chemical Engineering, California Institute of Technology

**Research Associateship Advisor:**

Takeshi Egami, Department of Materials Science, University of Pennsylvania

**Former Postdoctoral Fellows:**

So-Hyun Park (postdoc, SUNY Stony Brook)

Barbara A. Reisner (Assistant Prof., James Madison Univ.)

Roberto Senesi (Research Staff, Istituto Nazionale di Fisica Nucleare)

Nazy Khosrovani (Molecular Simulations, Inc.)

**Current Postdoctoral Fellow:**

Tammy Amos (NRC Fellow, beginning 11/2000).